

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Previously Presented) A carbon monoxide detector, comprising:
 - a housing forming a chamber therein, said housing including a first aperture;
 - a carbon monoxide sensor assembly having a second aperture positioned within said chamber;
 - a carbon monoxide gas generator assembly having a third aperture positioned within said chamber; and
 - a controller coupled to said carbon monoxide sensor assembly and to said carbon monoxide gas generator assembly, said controller commanding said carbon monoxide gas generator assembly to produce carbon monoxide, said controller further monitoring an electrical output of said carbon monoxide sensor assembly to ensure proper operation thereof;
 - said carbon monoxide gas generator assembly including:
 - a can forming a water reservoir therein;
 - a bottom disk positioned within said can to separate said water reservoir from an upper sensor portion of said can, said bottom disk including at least one aperture therein;
 - a hydrophobic layer positioned on said bottom disk covering said at least one aperture;
 - an electrode assembly positioned on said hydrophobic layer, said electrode assembly including an ion exchange membrane having electrodes deposited on an upper and on a lower surface thereof, said electrodes containing a mixture of carbon black and ion exchange polymer and no platinum;
 - a diffusion layer;
 - a gasket; and
 - a top disk in sealing engagement with said gasket, said top disk defining an aperture therein; and
 - wherein said can is crimped to seal said carbon monoxide gas generator assembly, said diffusion layer providing electrical contact between said top disk and a top of said electrode assembly, electrical contact between a bottom of said electrode assembly and said can being provided by said hydrophobic layer and said bottom disk.

2. (Original) The detector of claim 1, wherein said controller further monitors a voltage across said carbon monoxide gas generator assembly to ensure proper operation.

3. (Original) The detector of claim 2, wherein said controller signals a failure of said detector when said voltage across said carbon monoxide gas generator exceeds a predetermined level.

4. (Original) The detector of claim 2, wherein said controller signals a failure of said detector when said voltage across said carbon monoxide gas generator is below a first predetermined level and a decay of said voltage at a time t_{fall} is above a second predetermined level.

5. (Original) The detector of claim 1, wherein said first aperture is diffusion limiting and said second and said third apertures are non-diffusion limiting.

6. (Original) The detector of claim 5, wherein each of said carbon monoxide sensor assembly and said carbon monoxide gas generator assembly includes a water reservoir.

7. (Currently Amended) The detector of claim 5, wherein ~~one~~ of said carbon monoxide sensor assembly and said carbon monoxide gas generator assembly includes a water reservoir.

8. (Currently Amended) The detector of claim 5, wherein ~~said both~~ said carbon monoxide sensor and said carbon monoxide gas generator assembly share a single said water reservoir.

9. (Original) The detector of claim 1, wherein said first aperture is non-diffusion limiting and said second and said third apertures are diffusion limiting.

10. (Currently Amended) The detector of claim 9, wherein said each of said carbon monoxide sensor assembly and said carbon monoxide gas generator assembly include a water reservoir.

11. (Original) The detector of claim 9, wherein both said carbon monoxide sensor assembly and said carbon monoxide gas generator assembly share a single water reservoir.

12. (Original) The detector of claim 1, wherein said first, said second, and said third apertures are in gaseous communication through said chamber.

13. (Original) The detector of claim 1, wherein said controller monitors said electrical output of said carbon monoxide sensor assembly prior to commanding said carbon monoxide gas generator assembly to produce carbon monoxide.

14. (Original) The detector of claim 13, wherein said controller inhibits said commanding of said carbon monoxide gas generator assembly to produce carbon monoxide when said electrical output of said carbon monoxide sensor assembly is greater than a predetermined level.

15. (Original) The detector of claim 13, wherein said controller monitors said electrical output of said carbon monoxide sensor assembly at a time t_{peak} and during a period of signal decay, said controller further integrating said electrical output of said carbon monoxide sensor assembly from a time t_{start} to a time t_{stop} , averaging over said time t_{start} to a time t_{stop} and subtracting said electrical output of said carbon monoxide sensor assembly monitored prior to commanding said carbon monoxide gas generator assembly to produce carbon monoxide to derive a measure of said carbon monoxide sensor assembly response.

16. (Original) The detector of claim 15, wherein said controller utilizes said measure of said carbon monoxide sensor assembly response to correct a calibration of said carbon monoxide sensor assembly.

17. (Currently Amended) The detector of claim 1, further comprising means for compensating for variations in an ambient temperature variations.

18. (Original) The detector of claim 17, wherein said means comprises ambient temperature sensing circuitry in communication with said controller.

19. (Original) The detector of claim 18, further comprising a programmed current source/sink controllably in communication with said controller and operatively in communication with said carbon monoxide gas generator assembly, said programmed current source/sink generating a current pulse having a magnitude and a duration, said current pulse being delivered to said carbon monoxide gas generator assembly under command of said controller to cause said carbon monoxide gas generator assembly to produce carbon monoxide, said controller commanding an adjustment in said magnitude of said current pulse as a function of said ambient temperature to produce a constant amount of carbon monoxide.

20. (Original) The detector of claim 18, further comprising a programmed current source/sink controllably in communication with said controller and operatively in communication with said carbon monoxide gas generator assembly, said programmed current source/sink generating a current pulse having a magnitude and a duration, said current pulse being delivered to said carbon monoxide gas generator assembly under command of said controller to cause said carbon monoxide gas generator assembly to produce carbon monoxide, said controller commanding an adjustment in said duration of said current pulse as a function of said ambient temperature to produce a constant amount of carbon monoxide.

21. (Original) The detector of claim 18, wherein said controller compensates said electrical output of said carbon monoxide sensor assembly as a function of said ambient temperature to account for a variation in an amount of carbon monoxide gas produced by said carbon monoxide gas generator assembly as a function of said ambient temperature.

22. (Original) The detector of claim 18, wherein said controller ensures that said ambient temperature is within a predetermined range prior to commanding said carbon monoxide gas generator to produce carbon monoxide.

23. (Original) The detector of claim 17, wherein said means comprise a temperature sensitive load resistor network coupled to said carbon monoxide sensor assembly to automatically compensate said electrical output of said carbon monoxide sensor assembly as a function of ambient temperature.

24. (Original) The detector of claim 17, wherein said means comprise a temperature sensitive amplifier coupled to said carbon monoxide sensor assembly to automatically compensate said electrical output of said carbon monoxide sensor assembly as a function of ambient temperature.

25. (Currently Amended) The detector of claim 1, wherein said carbon monoxide sensor assembly comprises:

a second can forming a second water reservoir therein;

a second bottom disk positioned within said second can to separate said second water reservoir from an upper sensor portion of said second can, said second bottom disk including at least one an aperture therein;

a second hydrophobic layer positioned on said second bottom disk covering said at least one aperture of said second bottom disk;

~~an~~ a second electrode assembly positioned on said second hydrophobic layer;

a first washer positioned on said electrode assembly, said first washer having an outer periphery that is closely accommodated by an inner surface of said second can, said first washer further defining a hole therein having diameter that is smaller than a diameter of said electrode assembly;

a second diffusion layer positioned on said first washer;

a second washer positioned on said second diffusion layer, said second washer having an outer periphery that is closely accommodated by said inner surface of said second can, said second washer further defining a hole therein having a diameter that is smaller than a diameter of said diffusion layer;

a second gasket positioned on said second washer; and

a second top disk in sealing engagement with said second gasket, said second top disk defining an aperture therein; and

wherein said second can is crimped to seal said carbon monoxide sensor assembly, said second diffusion layer being deformed therein to provide electrical contact between said second top disk and a top of said second electrode assembly, electrical contact between a bottom of said second electrode assembly and said can being provided by said second hydrophobic layer and said second bottom disk.

26. (Currently Amended) The detector of claim 25, wherein said second diffusion layer and said second hydrophobic layer comprises a microporous carbon loaded PTFE compound.

27. (Currently Amended) The detector of claim 25, wherein said second electrode assembly comprises an ion exchange membrane having an upper and a lower surface thereof coated with an electrode.

28. (Cancelled)

29. (Previously Presented) The detector of claim 1, further comprising a first washer positioned on said electrode assembly, said first washer having an outer periphery that is closely accommodated by an inner surface of said can, said first washer further defining a hole therein having a diameter that is smaller than a diameter of said electrode assembly.

30. (Original) The detector of claim 29, further comprising a second washer positioned on said diffusion layer, said second washer having an outer periphery that is closely accommodated by said inner surface of said can, said second washer further defining a hole therein having a diameter that is smaller than a diameter of said diffusion layer.

31. (Previously Presented) A carbon monoxide detector, comprising:
a housing forming a chamber therein, said housing including a first aperture;
a carbon monoxide sensor assembly having a second aperture positioned within said chamber;
a carbon monoxide gas generator assembly having a third aperture positioned within said chamber; and

a controller coupled to said carbon monoxide sensor assembly and to said carbon monoxide gas generator assembly, said controller commanding said carbon monoxide gas generator assembly to produce carbon monoxide, said controller further monitoring an electrical output of said carbon monoxide sensor assembly to ensure proper operation thereof;

wherein said carbon monoxide gas generator assembly including:

a can forming a water reservoir therein;

a bottom disk positioned within said can to separate said water reservoir from an upper sensor portion of said can, said bottom disk including at least one aperture therein;

a hydrophobic layer positioned on said bottom disk covering said at least one aperture containing no platinum;

an electrode assembly positioned on said hydrophobic layer, said electrode assembly including an ion exchange membrane;

a diffusion layer containing no platinum positioned to contact said electrode assembly; a gasket; and

a top disk in sealing engagement with said gasket, said top disk defining an aperture therein; and

wherein said can is crimped to seal said carbon monoxide gas generator assembly, said diffusion layer providing electrical contact between said top disk and a top of said electrode assembly, electrical contact between a bottom of said electrode assembly and said can being provided by said hydrophobic layer and said bottom disk.

32. (Previously Presented) A carbon monoxide detector, comprising:

a housing forming a chamber therein, said housing including a first aperture;

a carbon monoxide sensor assembly having a second aperture positioned within said chamber;

a carbon monoxide gas generator assembly having a third aperture positioned within said chamber; and

a controller coupled to said carbon monoxide sensor assembly and to said carbon monoxide gas generator assembly, said controller commanding said carbon monoxide gas generator assembly to produce carbon monoxide, said controller further monitoring an electrical output of said carbon monoxide sensor assembly to ensure proper operation thereof;

wherein said carbon monoxide gas generator assembly including:

a can forming a water reservoir therein;
a bottom disk positioned within said can to separate said water reservoir from an upper sensor portion of said can, said bottom disk including at least one aperture therein;
a hydrophobic layer positioned on said bottom disk covering said at least one aperture containing no platinum;
an electrode assembly positioned on said hydrophobic layer, said electrode assembly including an ion exchange membrane;
a diffusion layer containing no platinum positioned to contact said electrode assembly;
a gasket; and
a top disk in sealing engagement with said gasket, said top disk defining an aperture therein; and
wherein said can is crimped to seal said carbon monoxide gas generator assembly, said diffusion layer providing electrical contact between said top disk and a top of said electrode assembly, electrical contact between a bottom of said electrode assembly and said can being provided by said hydrophobic layer and said bottom disk; and
further comprising a first washer positioned on said electrode assembly, said first washer having an outer periphery that is closely accommodated by an inner surface of said can, said first washer further defining a hole therein having a diameter that is smaller than a diameter of said electrode assembly.

33. (Previously Presented) A carbon monoxide detector, comprising:
a housing forming a chamber therein, said housing including a first aperture;
a carbon monoxide sensor assembly having a second aperture positioned within said chamber;
a carbon monoxide gas generator assembly having a third aperture positioned within said chamber; and
a controller coupled to said carbon monoxide sensor assembly and to said carbon monoxide gas generator assembly, said controller commanding said carbon monoxide gas generator assembly to produce carbon monoxide, said controller further monitoring an electrical output of said carbon monoxide sensor assembly to ensure proper operation thereof;
wherein said carbon monoxide gas generator assembly including:
a can forming a water reservoir therein;

a bottom disk positioned within said can to separate said water reservoir from an upper sensor portion of said can, said bottom disk including at least one aperture therein;

a hydrophobic layer positioned on said bottom disk covering said at least one aperture containing no platinum;

an electrode assembly positioned on said hydrophobic layer, said electrode assembly including an ion exchange membrane;

a diffusion layer containing no platinum positioned to contact said electrode assembly;

a gasket; and

a top disk in sealing engagement with said gasket, said top disk defining an aperture therein; and

wherein said can is crimped to seal said carbon monoxide gas generator assembly, said diffusion layer providing electrical contact between said top disk and a top of said electrode assembly, electrical contact between a bottom of said electrode assembly and said can being provided by said hydrophobic layer and said bottom disk and

further comprising a first washer positioned on said electrode assembly, said first washer having an outer periphery that is closely accommodated by an inner surface of said can, said first washer further defining a hole therein having a diameter that is smaller than a diameter of said electrode assembly; and

further comprising a second washer positioned on said diffusion layer, said second washer having an outer periphery that is closely accommodated by said inner surface of said can, said second washer further defining a hole therein having a diameter that is smaller than a diameter of said diffusion layer.

34-55. (Cancelled)